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ABSTRACT

The document comprises collections of experimental instructional projects generated by teachers at the Big Ten universities. The projects are usually aimed at improving the conditions for learning in a particular disciplinary area, but many of these arrangements can be easily adapted for use in other departments. The entries in Section 1; Subject-Matter Areas, describe department-based projects. Section 2, University-Wide Activities, includes descriptions of institutional facilities, instructional media arrangements, and broad programs that span different disciplines. Section 3, is the cumulative index to all 10 reports. (Author/MJM)

Development and Experiment In College Teaching

ED 094632

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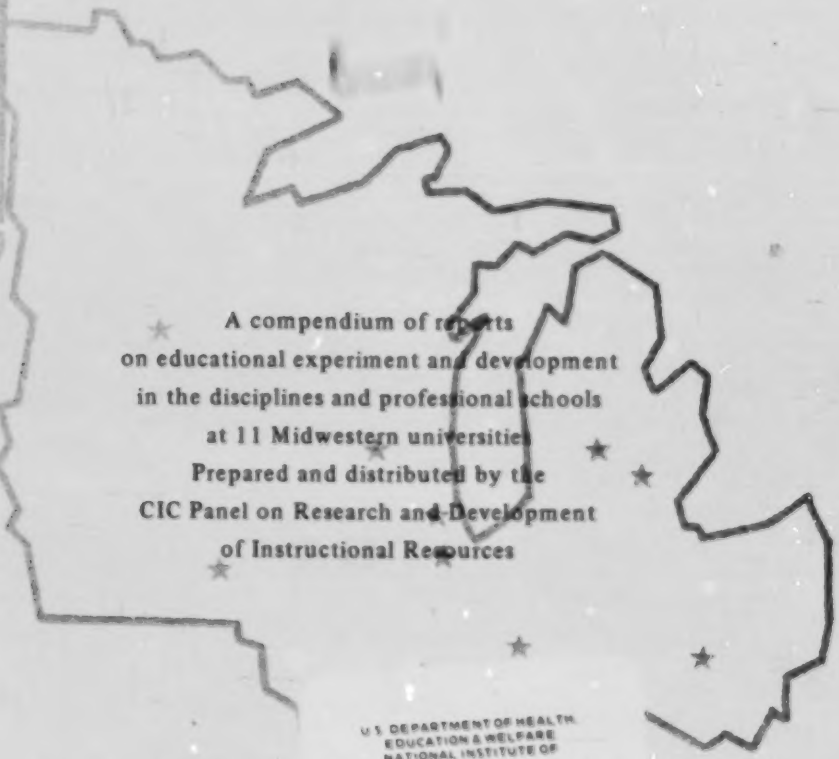

A compendium of reports
on educational experiment and development
in the disciplines and professional schools
at 11 Midwestern universities
Prepared and distributed by the
CIC Panel on Research and Development
of Instructional Resources

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REPORT No. 10 **SPRING 1974**

The Committee on Institutional Cooperation (CIC) was established in 1959 by the Big Ten Universities and the University of Chicago to facilitate pooling of resources and talents on matters of mutual concern in higher education.

Foreword

These annual reports comprise collections of experimental instructional projects generated by teachers at the Big Ten universities. Their purpose is served if they provide a useful exchange of information among college teachers, administrators, and educational researchers. The projects are usually aimed at improving the conditions for learning in a particular discipline area, but many of these arrangements can be easily adapted for use in other departments.

The entries in Section I, Subject-Matter Areas, describe department-based projects. Section II, University-Wide Activities, includes descriptions of institutional facilities, instructional media arrangements, and broad programs which span different disciplines. Section III is the Cumulative Index to all ten reports. This index has been updated by deleting references to projects that are no longer active.

Back issues of all reports are on file in the office of each institutional representative (see p. iv), and at the CIC central office. Copies of individual abstracts may be obtained from these sources. Requests to purchase back issues should be sent to the address below. This publication is not copyrighted and teachers and administrators are encouraged to make free use of the material.

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I. Subject-Matter Area

AFRO-AMERICAN STUDIES

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Introduction to Expository Writing

The first offering of Introduction to Expository Writing (A149) was a joint project of the Afro-American Studies Department, the Division of Development and Special Projects and the Audio-Visual Center, University of Indiana.

Because many of the students lacked the necessary background to handle the material in the text, the director of the Black Culture Tutoring Services and the project directors developed a prototype grammar test to aid in pinpointing areas of student difficulty while providing volunteer upperclass tutors with feedback on how to help their students. To assist students in transferring what was studied in A149, written assignmenis were coordinated between A149 and A150, a survey course on the Afro-American Experience. The project directors worked extensively with the associate instructors to familiarize them with the instructional development process and the many instructional resources available on the Bloomington campus.

In addition to these programs and logistical arrangements, a very popular discussion and film series was assembled and integrated with the regular course.

The initial list of materials was revised, and the following were field-tested and delivered to the Afro-American Studies Department:

1 - Set of objectives for the text, From Paragraph to Theme.

4 - Multiple choice criterion referenced content exams.

2 - Vocabulary quizzes.

1 - Set of overhead transparencies (109 transparencies).

3 - Slide/tape programs based on the text.

For additional information please contact: Dr. Joseph Russell, Director, Afro-American Studies Department, Indiana University, Bloomington, Indiana 47401.

AGRICULTURE

In-Service Programs for Effective Teaching

The Teaching Committee of the College of Agriculture and Home Economics at The Ohio State University was formed in 1972 to provide greater visibility and in-service programs for the teaching faculty in the College. This standing committee includes representatives from each of the ten Departments and two Schools and serves as a catalyst for teaching improvement.

In 1973-74 major emphasis was placed on a series of in-service enrichment seminars designed to answer specific needs of the faculty. In Autumn Quarter, 1973, Dr. Paul Carlson, Office of Educational Development, College of Pharmacy at Ohio State, presented three seminars on the subject of "Effective Examinations." The sessions included discussion of purposes of exams, alternative exam forms, pre and post test opportunities, exam construction and administration, exam validity and reliability, analysis and evaluation of exams, and exams as aids to learning.

In Winter Quarter, 1974, four seminar sessions were scheduled on the theme, "Teaching Evaluation." The first program featured Dr. Kathryn Schoen, Associate Provost for Faculties at Ohio State, who discussed the role of the administration in the evaluation process with particular emphasis on personnel decisions. The second seminar was chaired by Dr. David Boyne, Chairman of the Department of Agricultural Economics and Rural Sociology, and related to the use of evaluation and counseling as a tool to improve programs in a department. Three faculty members participated in the third session and discussed the types of student evaluation techniques they were using in their courses. The final seminar dealt with "Evaluation for Self-Improvement" and was led by Dr. Keith W[illegible]on, Coordinator of Educational Development, College of Agriculture, University of Minnesota.

The Committee plans a series of seminars for the Spring Quarter which will deal with "The Laboratory Revisited." This will involve discussions on the role of the laboratory in the teaching process and consider effectiveness, economics, and alternatives relating to the laboratory teaching environment.

For further information contact: Ken W. Reisch, Associate Dean, Agriculture and Home Economics, The Ohio State University, 100 J Ag. Administration, 2120 Fyffe Road, Columbus, Ohio, 43210.

ART

Electroforming Workshop

The University of Iowa Art Department is presently developing techniques for teaching electroforming. The process is one of the newest advances in the creation of jewelry, holloware and metal art forms. It permits the artist to make pieces of substantial size and unusual design, having only a fraction of the weight of traditional cast and fabricated metal. Electroforming, in contrast to electroplating's metal on metal process, deposits metals, such as gold, silver, copper or nickel on a matrix of either a metallic, or non-metallic substance, such as wax, styrofoam, wood, bone, plastic, or ceramic. Once the master form or matrix is carved or formed, it is painted with a metallic conductive, silver lacquer and then immersed in an electrically charged solution containing the metal to be deposited on the matrix. The amount of time that the master form remains in the solution depends on the thickness of final deposit desired. After the final deposition of metal, the matrix is removed by melting or burning out. The end product requires little finishing, which saves the artist much time.

The new electroforming techniques have both teaching and artistic significance. The teaching includes instruction in basic electrochemistry. A student's artistic expression is enhanced through electroforming's improved fabrication of articles that have intricate, internal shapes, varied surface textures, and close tolerance. Stones and other materials may be directly set in the matrix and with electro-deposition a sealed setting will be produced around the object. This would normally be difficult in regular setting techniques because of the time involved and problems in fitting irregular shapes of stones with other elements. Because of the large industrial sized tank measuring 3' x 4' x 3' deep, the student is capable of creating not only jewelry but large holloware and sculptural sized forms.

For further information contact: Chunghi Choo, Department of Art and Art History, School of Art, University of Iowa, Iowa City, Iowa, 52242.

BUSINESS ADMINISTRATION

A Real Estate Salesman's Course Via State-wide Television

One of the primary goals of the Real Estate Certification Program of Indiana University's Division of Continuing Education is to offer Indiana residents interested in a career in the real estate industry the opportunity to gain the basic skills of the profession through the completion of the Approved Real Estate Salesmen's Course (ARESC).

The course uses standardized instructional materials and examinations and the Indiana Higher Education Telecommunications System. Although successful use of IHETS has expanded the reach of the course, discussion leaders at each location remain an integral part of the instructional process. The discussion leaders are responsible for 1 1/2 hours of each class, while the television portion of the meeting accounts for the initial hour.

Material from three basic courses in I.U.'s School of Business comprises the nucleus of the ARESC: Principles of Real Estate, Real Estate Practices Laboratory, and Real Estate Law. The books for the course are two hardbound volumes and two paperback programming learning texts designed specifically for the course. Statistics compiled by the program office indicate that the average student has an 88% chance of successfully completing the schedule of training. Those students who complete the course have a successful passing rate on the Indiana license examination of approximately 86%. Enrollment increases have been dramatic: 604 students during the 1970-1971 academic year to 3,535 during the 1972-1973 academic year.

For more information regarding the Approved Real Estate Salesmen's Course of the Real Estate Certification Program contact: Stephen J. Martin, Program Director, Suite 555, Activities Center Tower, Indiana Memorial Union, Indiana University, Bloomington, Indiana, 47401.

CHEMISTRY

Development of a Modular Multipath General Chemistry Program

General chemistry courses at MSU serve several thousand students from dozens of academic majors. The Chemistry faculty established a committee to study the first year program in depth. Their recommended revisions included components of the Keller Plan and of modular multipath learning. The objective was to improve the teaching of introductory chemistry by maximizing individualization of subject matter and teaching methods without burdening the faculty or graduate teaching assistants, without increasing cost, and without sacrificing scholarly standards.

The new general chemistry course has no lectures, no recitation sections, and no conventional laboratories. Rather, subject matter is treated as a sequence of topics and a study guide was developed for each topic, stating in detail the objectives, reading assignments, and facts or ideas to be mastered. It provides questions to be answered and learning aids available from the Chemistry learning center.

The list of topics is comparable in nature to the chapters in a general chemistry book. Each topic is subdivided into units or modules of subject matter comparable in size to what might be presented in one lecture period. Thus, nine units of work correspond to one term credit, and completion of 27 units satisfies the requirement of a three-credit course. For each required topic, there is an introductory unit which provides the minimum essential material to be mastered by all students who undertake that topic. Following the introductory unit are various strings of units, which may be called branches. These serve the varying interests of students oriented towards the physical sciences and mathematics or students in the medical or biological sciences.

When a student feels he has mastered a topic, he then takes a test at a computer terminal. If he passes, he goes on to the next topic or takes another version of the test to improve his grade after additional study. Repeated failure causes the computer to direct the student to a tutor for additional personal help.

It is too early to tell whether the multipath modular course has achieved all of its intended objectives. Preliminary data indicates that student acceptance of this instructional format has been good with no decrement in student achievement.

For further information contact: Dr. Robert N. Hammer, Department of Chemistry, 118 Chemistry Building, Michigan State University, East Lansing, Michigan 48824.

COMPUTER SCIENCE

Development of a Self-Paced Mastery Instructional System Using a Computer Management and Grading Program

The basic computer programming course, enrolling some 1600 students per year, has been organized into a self-paced mastery instructional program of 24 units. Each unit consists of a packet of materials including: (1) an overview of the subject matter to be learned; (2) a list of behavioral objectives; (3) a list of instructional activities; (4) self-assessment instruments with immediate feedback; (5) four alternate mastery evaluation instruments; and (6) supplementary information necessary to achieve the unit objectives.

Students are required to achieve mastery of 14 out of the 24 units to earn a grade of 2.0 (C). For each two units thereafter (enrichment material), their grade is increased by one-half a point. Thus far, approximately 50% of the students have elected to go on and complete all 24 units for a grade of 4.0 (A).

Students learn through a combination of TV lectures and the prescribed learning activities in the mastery materials. Students encountering difficulties are encouraged to visit a learning center where they can obtain tutoring from undergraduate consultants hired for this purpose. After completing all of the suggested instructional materials, students then go to the learning center to take the mastery test for the particular unit. Scoring is accomplished on the spot. Three times per week a computer print-out indicates each student's rate of progress and his projected grade. Thus, each student has a permanent file in the computer and both students and tutors have access to the file.

Thus far, data show that students are extremely pleased with the mastery format but overloaded with content. Nevertheless, students in the mastery section performed better on the common final exam than 12 out of 14 conventional sections.

For further information contact: Dr. Floyd E. LeCureux, Department of Computer Science, 225F Engineering Building, Michigan State University, East Lansing, Michigan 48824.

COUNSELING

Interpersonal Communication Training in Residence Halls

During the past ten years a method known as IPR (Interpersonal Process Recall) has been developed and validated at Michigan State University. The method is designed to enable people to learn to be more effective in their interpersonal relations and to have a positive influence on human interactions. The skills are taught through a series of filmed demonstrations and videotaped exercises, each of which is designed to facilitate a specific dynamic interpersonal task.

Although the IPR process has been used primarily to teach people in the helping professions (counselors, physicians, psychologists), it was felt that IPR could be of great benefit to MSU undergraduates. Many of the problems of modern university life can be traced to the feeling of isolation and anonymity on the part of the students. Direct instruction in specific interpersonal relations skills was offered as an elective three-credit course in Holmes Hall sponsored jointly by the College of Education, the Counseling Center, and the Department of Psychiatry. First, a pyramid schedule was developed to increase the number of students trained each term. Second, evaluation measures were designed to identify "quality of life" with Holmes Hall as the experimental dormitory and two other similar halls as control units.

After three terms of IPR training, the results are encouraging but not conclusive. A number of criterion measures have shown an overwhelming acceptance of the course and testify to its effectiveness in improving interpersonal skills. However, a number of nonobtrusive measures have not changed enough to warrant the conclusion that the quality of life in the dormitory social unit has changed significantly, as yet. The investigators hypothesize that the number of IPR trained people must be increased over its present level of 22% to reach a critical mass and that social impact can only be measured over longer time segments than academic terms. Therefore, the experiment has been extended another year.

For further information contact: Dr. Norman Kagan, Department of Counseling, Personnel Services and Educational Psychology, 434 Erickson Hall, Michigan State University, East Lansing, Michigan 48824.

DENTISTRY

Individualized Programs of Study in Dentistry

The School of Dentistry at the University of Michigan has launched a broad-scale program of individualized self-paced learning. Responsibility for the technical development of these instructional arrangements is with its Department of Educational Resources, which, in turn, has directed its major effort to the Pilot Program in Dentistry. This experimental program is designed to allow a group of 30 students to start their professional training in the Fall of 1974 and to progress through the entire four-year program at whatever pace is necessary for mastering the assigned objectives.

The Pilot Program in Dentistry makes extensive use of educational technology, and instructional media and self-study units have been completed in several curricular topics in the basic sciences, the applied sciences and preclinical dentistry. Materials thus far produced include individualized textbooks, self-instructional manuals, slide/tape presentations, film strips, videotapes, and computer aided instructions (CAI). Media production has reached a total of over 500 videotapes; 50 film strips, 100 slide/tapes and CAI programs have also been developed for courses in several departments. Techniques for producing computer-animated films have been refined and films of this type have been produced for students' use.

The more than 50 full and part-time staff members in the Department of Educational Resources work closely with the dental faculty and students. This large department involves three major divisions: Telecommunications (all aspects of instructional media production and supporting services); Information Systems (production and delivery of computer aided instruction); Instructional Research and Development (the research, design, and delivery of instructional materials). In addition to the production and delivery facilities, the Department manages the CAIDENT Center which includes 22 two-person study carrels equipped with slide projectors, audiotape playback devices, filmstrip projectors, and computer terminals. Eighteen videocassette viewing stations and two group viewing rooms for eight students each are also available. It is possible to serve approximately 88 students at one time and the CAIDENT Center is open for more than 80 hours each week.

Based on developments to date, it is believed that the Pilot Program in Dentistry will become a major center and source of validated teaching materials for dental education. It also serves as a training and demonstration center for more effective modes of instruction and the efficient use of manpower, technical, and space resources in this area of professional education. The Bureau of Health Manpower Education, HEW, has been a major source of budget support for the Pilot Program.

For further information and a catalogue of available instructional materials contact: Dr. David Starks, Chairman, Department of Educational Resources, School of Dentistry, University of Michigan, Ann Arbor, Michigan 48104.

Teaching Oral Cancer Recognition Through Computers and Slides

This (CAI) course is a combination of simulations and tutorial instructional methods to train third year dental students and practicing health professionals in the detection and diagnosis of oral cancer. Six case study situations are presented which allow the learner to interact with data regarding various aspects of patient history, physical examination, and laboratory examinations. Information is presented only when specifically requested.

The learner selects three diagnoses in a differential listing for cases 1 and 2. These two cases form a pretest evaluation of the learner's background knowledge of clinical oral cancer precognition. At the end of the course, summaries of these two cases are presented, and the learner is given the opportunity to change the differential diagnosis listing. Cases 3, 4, 5, and 6 similarly utilize the clinical information to assist the learner in arriving at a diagnosis. The tutorial CAI programming assists the learner in correcting wrong diagnoses.

The middle portion of this course consists of linear and branching tutorial CAI programming covering the following topics:

1. Normal appearance and expectations for various oral regions regarding cancerous lesions,

2. Congenital and acquired lesions mimicking cancer in appearance,

3. Eleven lesions to be diagnosed by appearance alone as "cancer" or "benign," followed by history enumeration. This section is used to impress the learner with the necessity for utilization of an adequate history along with clinical appearance to base a diagnosis,

4. Three optional sections:
   a. Biopsy and referral techniques
   b. Oral exfoliative cytology examinations
   c. Statistics regarding cancer and oral cancer

For further information contact: Dr. Mary M. Gnezda, Associate Director, Educational Services, College of Dentistry, The Ohio State University, 305 W. 12th Avenue, Columbus, Ohio, 43210.

ECONOMICS

A Training Program for TAs Using Videotapes,
a Seminar, and a Tape Library

The Department of Economics is continuing its efforts to enhance the teaching effectiveness of its teaching assistants. This is being done through: (1) the videotaping of TA's classroom performance and subsequent critiquing of the tapes; (2) the development of a new seminar on the teaching of college economics; and (3) a program to develop a library of video and audio tapes to assist in the training of TAs.

(1) Videotaping. The videotaping program has been in operation since Fall 1972 during which time numerous TAs and faculty have been videotaped. The emphasis in this program is not on evaluating people's teaching but rather on providing positive and supportive feedback and criticism. The department has a complete recording unit as well as a replay unit, thereby providing flexibility in accommodating requests for taping and replays.

(2) Teaching Seminar. The teaching seminar was formally organized and first taught in Fall 1973. Some of the materials for the seminar were developed for a Joint Council on Economic Education (JCEE) Summer Workshop held at the University of Indiana in 1973; the materials are being tested in seminars at Wisconsin and Minnesota this year and will be revised so that eventually they can be more widely disseminated among graduate economics departments.

(3) Tape Library. Efforts are underway to acquire a variety of video and audio tapes that will be useful in the training of TAs. Existing tapes will be assembled during the coming year. In addition, we plan to produce a number of tapes that will capture the experience of our TAs and faculty. These tapes will show TAs presenting materials in ways they have found to be most successful, recounting particular teaching problems and how to resolve them, discussing special problems that arise in teaching certain types of courses, etc. We also hope to develop some tapes covering basic economics concepts that would be available to assist students who are experiencing difficulty in the elementary economics courses.

For further information contact: W. Lee Hansen, Chairman, Department of Economics, University of Wisconsin, Madison, Wisconsin, 53706.

EDUCATION

Personalized Instruction in Educational Psychology

In an undergraduate educational psychology course, personalized instruction (mastery learning) techniques are used to teach the principle of operant psychology. Students then apply these principles to their own behavior in self-modification projects.

Students choose a wide variety of behaviors to modify. Many choose interpersonal behaviors such as communication, and others deal with individual behaviors such as academic performance, study habits, weight loss, and piano practice.

Nearly all students report success in their projects. There is some evidence that changes extend beyond the end of the course and that students apply the procedures to additional aspects of their behavior. Students are quite positive in their attitudes toward the project.

The method provides a humanistically acceptable way of teaching and applying behavioral psychology. It provides preservice teachers with an opportunity to experience behavior modification "from the inside" and thus sensitize them to its use with children in their classrooms.

Much of the instruction can be directed by the learner. Quizzes have been administered by computer. Instructors prepare mastery materials and act as consultants on student projects. Research is being conducted on the relationship between success with self-modification projects and the personality and ability characteristics of students.

For further information contact: Dr. Robert J. Menges
or Dr. William C. McGaghie, The Center for the Teaching Professions, 2003 Sheridan Road, Northwestern University, Evanston, Illinois, 60201.

ENGINEERING

An Experiment on Integration of Engineering Courses

Are there educational disadvantages engendered by students taking 40 or so individual, largely unrelated courses, often five at a time? The Industrial Engineering Department at the University of Wisconsin, Madison, has combined 12 credits of previously unrelated material taught in three separate courses into one "course." Four instructors were involved, entering and leaving at various times during the semester.

This "course" has now been offered twice, and the major benefit is increased student-student interaction and resultant peer learning. The student gets to know other students because of the increased time together and the fact that the classroom serves as a focus for after class study and group activity. A second benefit is the scheduling flexibility; teacher-student contact is not forced into precise 50 minute packages interspersed with other, non-related activities. The third feature, teaching the material serially (one topic at a time), is a benefit and a problem. It certainly does remove much of the "intellectual juggling," but it has also compressed some topics, such as computer simulation, into a very short time span.

The only really tough problem is that the faculty is not being used in a truly cooperative teaching venture. The material is still being taught in relative isolation by instructors one at a time, and we will have to give serious consideration to this problem.

For further information contact: Professor Gordon H. Robinson, Department of Industrial Engineering, University of Wisconsin-Madison, 53706.

A Packaged, Marketed Course in Vacuum Technology

Purdue is in the midst of a small experiment in the commercialization of engineering education. A multi-media learning package on the Fundamentals of Vacuum Technology has been developed with the express purpose of marketing the package to companies for in-plant use. It is hoped that receipts from the sale of this package will more than pay for development. Since the package is also used in the on-campus instructional program, there could be cost savings to the University.

The format of the package combines and coordinates the use of a standard textbook, Vacuum Technology, by Andrew Guthrie, a set of Supplemental Notes by R.M. Anderson, and a set of 15 minute videotape segments. The content of the course is divided into 20 learning units: 2 on introductory topics, 10 on vacuum pumps and 8 on vacuum gauges. The learning units are independent but tied together by means of a multi-branched prerequisite chain. Each unit has a set of specific learning objectives, a check list which leads the students from notes to tape to text, etc., and a set of questions which can be used to determine whether the participant has achieved the learning objectives of the unit. Continuing education units (CEU credits) are available with the course.

The lease-for-life cost of the package depends upon the format chosen for the videotape. For one copy of the text, one copy of the Supplemental Notes (over 500 pages) and one set of videotape segments (just over 10 hours total in 39 segments) in 1/2" open reel format, the cost is $2,700. A total of 4.0 CEU may be earned through successful completion of the package. An examination kit is available for two week rental at a cost of $50.

The on-campus use of the course is in a three credit, one semester, offering in the School of Electrical Engineering. Students work through the learning package on a self-study basis, plus one lecture session each week.

Since university instruction is highly labor intensive, the concept of this course, or a modified version of it, has the potential to effect substantial reductions in instructional costs.

For further information contact: Robert M. Anderson, Jr., Associate Professor of Electrical Engineering, Purdue University, W. Lafayette, Indiana, 47907.

Developing an Interface Between Engineering and the Social Sciences

The Alfred P. Sloan Foundation, New York, New York, has awarded a $230,900 grant to Ohio State University for "Developing an Interface between Engineering and the Social Sciences."

Dr. George Smith, professor of systems and industrial engineering and project director, explains that, "As an example, the siting of a power plant is a routine problem for an engineer. He would consider the economics of production, maintenance, and transportation. But other factors of equal importance are the political, psychological, and environmental impact of the site. The purpose of this project is to broaden the traditional problem-solving engineering approach."

The Ohio State faculty team on the project includes engineers, psychologists, and political scientists. Their first task was to prepare a classroom course, to be taught in two academic quarters in each of the two project years, which applies engineering and social principles to a specific problem. The first class (Winter 1974) deals with the site selection of a hypothetical power plant. During the class, students are made aware of the myriad of societal factors, other than engineering, which should be considered in the site selection.

For further information contact: Dr. George Smith, Department of Industrial and Systems Engineering, The Ohio State University, 1971 Neil Avenue, Columbus, Ohio, 43210.

"The Man Series": Interdisciplinary Courses on Technology and Social Problems

Eleven new interdisciplinary courses, known usually as "The Man Series" (e.g., Man and Energy, Man and His Models, Man and Health Care), are now being taught and developed by faculty teams at Purdue. The series offers novel, interdisciplinary, team-taught courses, each considering a different aspect of technology's role in creating or relieving major social problems. The general purpose of the courses is to broaden the undergraduate engineer's awareness of technology's impact on society and to serve similar purposes for the non-engineering student.

The faculty teams for individual courses range from two or three in number (at least one member from outside engineering) to eight or nine. The teams include economists, political scientists, sociologists, philosophers, artists, and other faculty from the arts, social sciences and humanities, as well as many engineering specialties. These teams have met together to plan each course and to share responsibilities in teaching. Not surprisingly, a number of the faculty are cooperating across departmental lines for the first time and are meeting colleagues also for the first time.

Lecturing is minimized and, instead, the courses make use of discussion, special projects, computer simulations, slide presentations, and other methods. While it is still too early to judge the success of the series, several things have been noted: the faculty teams are cooperating effectively, important new concerns are now incorporated in the curriculum both for engineers and other students, and the attractiveness of the courses for non-engineers has been greater than expected. More extensive evaluation is being carried out by the Engineering Education Research Unit, which is monitoring the results in all the courses.

For additional information contact: Professor Richard E. Grace, Division of Interdisciplinary Engineering Studies, AAES 140, Purdue University, West Lafayette, Indiana, 47907.

ENGLISH

Self-paced Materials for Teaching Rhetoric

As an alternative to traditional classroom instruction, for three semesters (beginning in the Fall of 1971), students were required to work a lesson a week from the Correspondence Manual for Expository Writing. One class meeting a week was reserved for questions about that week's assignment. Students not having questions were excused from attending that particular class. This program seems to offer distinct advantages over traditional classroom instruction: (1) Attendance during the remaining three class meetings is increased; (2) Students seem more responsive to class activities; and (3) Students complete more writing than in previous classes.

During the Spring and Summer of 1973, the program was revised and rewritten to focus specifically on a sequence of lessons. The instructional materials consist of sixteen lessons; one lesson for each week of the semester. The sixteen lessons for the first semester include six explanations of basic elements of expository writing with accompanying reading assignments. The remaining ten lessons are assignments for the writing of themes. The sixteen lessons for the second semester include six on writing a research paper, four on writing argumentative essays and six on argumentative themes.

These sequential units allow the student to learn the basic elements of expository and argumentative writing at his own pace and to improve his reading skills.

For further information contact: William G. Clark, Rhetoric Department, Engligh Philosophy Building, University of Iowa, Iowa City, Iowa, 52242.

Student Led Discussion Groups in Large Lecture Courses

English 436, a lecture course on major film directors, enrolls 130 students. Besides lecture, full-class two-hour discussion, and film viewing, the course has 15 small student-led groups of 6 to 12 students. This gives students 1) opportunity in a large course to express their own minds on the film and course, 2) a non-graded context within the course for which they themselves have to take most of the responsibility, and 3) opportunity to develop close relationships centering around the experience of coming to grips with Fellini, Godard, and Bergman.

Groups submit a weekly report on their meetings. Each group has, as facilitator, someone previously in the course, either a graduate teaching assistant or an undergraduate receiving three credit hours for this role. Facilitators, who keep logs of their experience and meet frequently with the instructor, are 1) to find every way possible to stimulate informal group discussion without taking over the group themselves and 2) to develop their role in the group according to their own personality and the needs of that group.

In the eyes of both students and facilitators the groups are very successful. Almost all students replying to a midterm questionnaire, emphatically affirmed that the groups are welcome elements in a course of this size; answers enthusiastically asserted that facilitators had kept discussion moving, had suggested fruitful areas of discussion, had added insight, and had avoided domination of the groups.

A variation of this small group approach was used in English 232 (introduction to short story and novel), a lecture-section course with 180 students. For the last 6 weeks students could splinter off and form small groups (under 10) where they could determine their own reading list, meeting time and discussion methods, and suggest appropriate questions for half of their two hour final. All 33 students who replied to a questionnaire said they would repeat, and even extend, the splinter group experience: they liked the informality, freedom, and intensity of the discussion, the motivation, involvement, and interest deriving from their having chosen their own reading and from having responsibility for the discussion; a number were impressed by the trust in them that establishment of such groups implied.

For more information contact: Assistant Professor William Alexander, Department of English, 1631 Haven Hall, University of Michigan, Ann Arbor, Michigan 48104.

FAMILY AND CHILD SCIENCE (HOME ECONOMICS)

Development of a Peer Group Mediated Learning Model in Human Sexuality

"Human Sexuality and the Family" enrolls students from a wide background of disciplines. As enrollment increased, a major concern was to find ways of accommodating the increase while maintaining and expanding non-lecture teaching-learning approaches with a focus on peer interaction. A second concern centered around ways of facilitating student reading of a wide diversity of materials and ways of simplifying grading procedures without losing faculty interaction with students and the opportunity for essential original student work to be used as a basis for evaluation.

Following development of course objectives, considerable effort was devoted to development, testing, and evaluation of various organizational designs for small group interactions in which students would learn and discuss human sexuality content and clarify their values. Concurrently, a variety of instruments for pre- and post-test measuring of student information and behavioral and attitudinal change was obtained or developed.

Some new materials were tested and an anonymous paper, by each student, at the beginning and end of the term on "Who I am Sexually" was used to allow students to analyze changes they saw in their own behavior as a result of this course. To facilitate maximal student interaction during the peer group sessions, a training seminar for small group facilitators was developed. This seminar focused on small group leadership procedures, didactic input about small group process and discussion about course issues such as facilitator roles and evaluation procedures.

While further work is needed, student questionnaires indicated overwhelming support for the teaching model used in the course. It is anticipated that this teaching model will be continued with modifications as required.

For further information contact: Mrs. Eleanor S. Morrison, Department of Family and Child Science, 405 Human Ecology Building, Michigan State University, East Lansing, Michigan 48824.

GEOGRAPHY

Teaching About the Natural Environment Through the Use of Visual Materials

The format of the course, Natural Environment and Man, taught at the University of Iowa, which enrolls 250-300 students yearly, has been revised to include ground photographs in combination with the traditionally used topographic maps and aerial photographs. The change was made to increase understanding of the abstraction of spatial elements encountered when studying the nature of the environment.

One of the major problems encountered in teaching courses dealing with the natural environment and man is the difficulty students have in visualizing landscapes that define the environment. Fieldtrips and the use of maps have been traditional solutions to the problem. As evidenced by responses recorded on evaluation forms, students exposed to traditional laboratory techniques and exercises have demonstrated their dissatisfaction and resistance to such methods.

The revised technique, incorporated into the discussion section of the course, involves the use of a rear projection screen and Carousel projector. The ground view photographs (in the form of slides), are projected on a screen simultaneously with topographic maps and/or aerial photographs of the same area. Thus, the student is able to connect the qualitative, visual view with the more quantitative but abstract mapping of elements of an environmental problem. The advantage of a lighted room when using the technique facilitates discussion and permits students to solve problems involving the use of maps and air photographs.

The results obtained from the use of the ground photographs have been favorable and the program is presently being extended to involve other courses dealing with natural environment within the Department of Geography.

For further information contact: Neil E. Salisbury, Geography Department, University Library, University of Iowa, Iowa City, Iowa, 52242.

HISTORY

"The Film as Social History: World War II as Portrayed in the American Film, 1939-1945"

In recent years history, like other disciplines, has been accused of "traditional data transmission" and "lack of relevance." The search for innovative methods in response to such charges has led to the indiscriminate use of such materials, sometimes to provide entertainment rather than a learning experience.

This concern led me to attempt a demonstration of the application of the film as a historical document adding a new dimension to the student's "feel" for another era. Having recently experienced a "limited war," our students might profit from the re-creation of another kind of conflict--"total war."

Working with our campus audio-visual coordinator, I arranged fifteen documentary and feature movies released between 1939 and 1945 in chronological order to demonstrate how the motion picture's treatment of the war changed with the escalating events in Europe and the Far East. It became evident that the films grew distinctly more interventionist and sympathetic to the Allied cause in the period before December 1941. The last segment of the course was presented topically, stressing the variety of themes that were communicated through both the feature films and the government documentaries following American involvement in the war. Background lectures before the showings, combined with coordinated readings on reserve, provided an understanding of the historical context for each film (including the role of the government in encouraging Hollywood to cooperate with the total war effort). The lively discussions following each movie stressed the propaganda content of the film and the dominant themes developed.

A review and a final examination revealed a considerable degree of comprehension of the wartime uses of the film. Subsequent student evaluation also indicated that 86 per cent of those responding perceived the course as containing at least "an appropriate amount of academic content" for a college-level course. Moreover, 89 per cent of respondents expressed the opinion that similar courses should be offered in the future. Finally, the course attracted an unusually large enrollment and included a significant number of older auditors who found the course attractive for their own reasons.

For further information contact: Professor James J. Lorence, Department of History, University of Wisconsin Marathon Center, 518 South Center Avenue, Wausau, Wisconsin, 54401.

LANGUAGE

CAI in Beginning Ancient Greek

In 1973, the Classics Department of the University of Minnesota embarked on a project for the development of CAI materials for Beginning Ancient Greek. These materials were to be developed in two phases: Phase I, the production of context independent algorithms arranged in units, each of which would cover a particular morphology or syntactical problem, Phase II, further refinement of materials initiated in Phase I, and the development of sophisticated branching programs to insure high learning and retention levels. Phase I, therefore, was envisioned as ancillary to regular classroom instruction, while Phase II would convert the program to a complete instructional program for independent study.

The materials for the first phase have been developed and used during 1973-1974. To supplement the materials of Phase I, textual materials and readings adapted from Lysias, Plato, Lucian, and the New Testament have been created. The textual explanations have been kept to a minimum, since the emphasis is context independent.

The results of the first year's work have indeed been encouraging. Two sections of students have used the materials, one section in a classroom context, the second working independently. Both student groups' evaluations of the project and their performance have been high.

In the 1974-1975 school year, all sections of Beginning Ancient Greek will have access to CAI materials, either ancillary to classroom instruction or for independent study. Furthermore, with the creation of branching programs, it will be possible to offer Beginning Ancient Greek at any time during the year. In past years, this has not been economically feasible. The addition of audio-visual materials and new methods for the acquisition of vocabulary are also being planned.

For further information contact: Professor Gerald Erickson, Michael Kunin, or Walter Nichipor, The Classics Department, 310 Folwell Hall, University of Minnesota, Minneapolis, Minnesota, 55455.

LAW

Computer Exercises for Law Students

Computer exercises have been developed to supplement the classroom and textbook instruction on basic evidence in the first-year Civil Procedure course. The computer was programmed with the transcript of a simulated trial. Students were placed in the role of judge, and told to sustain or overrule objections to evidence. If the student sustained an objection, he was asked to give his grounds. If he overruled an objection, he was asked to justify his ruling--for example, by explaining why the evidence should not be excluded under the hearsay rule. Students picked their responses from a list of choices provided by the computer. If a student gave a wrong answer, the computer sometimes would explain why the answer was wrong, and then ask him to give a better answer. Some of the problems had no clear right or wrong answers. In such cases, the computer would describe the arguments which could be made on both sides.

The exercises gave first-year students a chance to apply abstract rules to concrete factual situations. In some instances, the exercises required students to decide whether a common law rule described in the casebook should be applied by analogy to circumstances in which the effect of the rule could not be determined merely by deduction from its literal terms.

The computer was a valuable supplement by giving each student an opportunity to participate actively in the learning experience and to receive feedback. In an evaluation survey, 95% of the respondents stated that they believed that the exercises were an effective way of learning basic evidence, with 75% stating that they "strongly agreed" or "very strongly agreed" that the exercises were an effective learning experience. (91 of 102 students responded to the survey.)

In 74-75, the initial "overview" section of the first-year Civil Procedure course will be supplemented with computer exercises in pleading, pre-trial motions, discovery, trial procedure, motions after verdict, remedies and appellate procedure.

For further information contact: Professor Roger Park, Law School, 125 Fraser Hall, University of Minnesota, Minneapolis, Minnesota 55455.

LIBRARY SCIENCE

Self-instruction on Library Procedures

A project was undertaken to provide library patrons with instruction bout using the facilities. More specifically:

A. Public Card Catalog--to locate library materials by using the catalog.

B. Indexes--to locate periodical materials by using the indexes.

C. Undergraduate Library--to be able to utilize the varied resources of the UGL.

These needs were met by providing mediated instruction in carrels located in strategic spots in the Library.

The development team decided on the following configuration of instructional devices to meet the three needs outlined above:

A. Public Card Catalog
   1. Carrel with two programs (Main Entry Card and Locating Materials) available in an automated system that requires no patron/equipment interaction except for picking up a telephone handset to start the program.
   2. Portable cassette playbacks that can be checked out from the Circulation Desk or Reference Desk. The two programs deal with problem approaches to the Catalog: e.g., if you have a class project, how can the Catalog be used to help you find materials. The programs direct patrons into the Catalog for instruction.

B. Indexes
   Carrel located near the indexes requiring only that a patron pick up a telephone handset. This program is based on an existing program from Northern Illinois University.

C. Undergraduate Library
   Carrel located in the UGL with an automated system of the type in the other two carrels.

There has already been extensive testing of one program (the Main Entry Card) in a carrel situation. Evaluations indicated general patron approval of mediated instruction for such topics.

For additional information contact: Julie Ann Nilson, Central Library, Indiana University, Bloomington, Indiana 47401.

MATHEMATICS

Individualized Supplementary Calculus Instruction (ISCI)

The ISCI computer system is designed to help students with several basic topics in single-variable calculus. It is presently being used at the University of Minnesota by the 1500 students enrolled in calculus.

The program provides the student with help in solving specified problems from the calculus. The student is assumed to have attempted the solution of the problem, and to have been unable to complete the problem correctly. The program then interrogates the student about the attempted solution. Upon finding an error, it points out that there is an error, then gives as many hints and/or explanations as the student requests, all the while encouraging the student to sign off and continue the solution independently.

A preliminary evaluation of student use, carried out during Fall Quarter, 1973, suggests that about one-half the students enrolled in the calculus course used the program and nearly all felt it was "helpful" or "very helpful." Also, the data indicated that performance in and attitudes about the course improved over the quarter for most of those using the program. A thorough evaluation of the program's use on performance and attitudes during Winter Quarter, 1974, is available upon request.

The program is written so as to be readily transportable to other systems, and funding is expected to be available for setting it up at other institutions. It is presently available to anyone on the Minnesota time-sharing system MERITSS.

The development of ISCI has been partially supported by a grant from the Fund for the Improvement of Postsecondary Education, a department of HEW. For further information contact: Professor Leonard Shapiro, Department of Mathematics, 334 Murphy Hall, University of Minnesota, Minneapolis, Minnesota, 55455.

MEDICINE

A Medical Campus the Size of Indiana

Two of Indiana's pressing problems in medical education are being met by extending the boundaries of the state's one medical school to each end of the state. The extension uses the resources of the state's higher education telecommunications network (IHETS) plus the educational resources of five major universities within the state, and those of hospitals in each of Indiana's population centers. These are combined to accomplish two important ends: (1) to increase the medical school enrollments from the level of about 220 students per class to a projected 320 and (2) to enlarge greatly the openings for in-state training of medical interns and residents. The present plan increases these openings by 181, at a cost to the state of $2.3 million, a comparative bargain. The state will benefit by retaining many of the trainees, upon completion of their training.

An example will show how the program of increased enrollment operates. Purdue, which has no medical school, nevertheless is a science-oriented university with its own programs in veterinary medicine and nursing, and with many qualified and specialized faculty. Purdue is situated near two major hospitals and is connected to other educational and medical centers in the state via the IHETS network. Purdue now enrolls 14 freshman medical students of the Indiana University School of Medicine, and their more specialized instruction is received from medical school faculty via the IHETS network and from the locally-assigned medical program coordinator, who holds faculty appointments both at the medical school and Purdue.

The program operates similarly at Notre Dame, Ball State, Indiana State, Indiana-Bloomington, Evansville, and Gary. Freshman students from each of these campuses merge with classmates for their sophomore through junior or senior years at the medical school in Indianapolis. The program's advantage is not only increased enrollment, but relatively quick implementation, without major new facilities, and while maintaining a high level of educational quality.

For further information (from a "satellite" center--Purdue) contact: Lindley H. Wagner, M.D., Director of the Lafayette Center for Medical Education, Graduate House--East, Purdue University, Lafayette, Indiana 47907.

Instructional Research and Development in Pediatric-Cardiology

During the past year, members of the Department of Pediatrics, Psychological Foundations in Education and the Consulting Group on Instructional Design have collaborated in a study on instruction in pediatric cardiology. We have defined the content of pediatric cardiology and studied the competencies necessary to perform an adequate diagnosis. Following these first phases we divided our project into the development of instructional tools and evaluative instruments. Four prototype computer programs were developed, as follows:

(1) Programmed text (information program)--similar to the more familiar written programmed textbooks which provide the basic information with opportunity for the student to test his knowledge through questioning and feedback.

(2) Instructional program (information-discrimination program)--teaching the student to interpret and make discriminations on clinical data. The student is presented patient data via audio tapes or slides and asked specific questions. After each response he is given either reinforcement or correction.

(3) Clinical simulation (patient management problem)--to simulate a clinical situation and present the student with multiple pathways to work through a particular diagnostic or management problem. Following a description of the clinical setting, the student gathers data and makes decisions concerning management.

(4) Evaluation program--the student is presented introductory information about a patient. He can then seek information about history, physical examination, and laboratory data. Based upon his presumed diagnosis, he can then select management alternatives. The student's responses are scored and compared to an optimum score.

The four programs have been subjectively evaluated by student responses to the programs. The students we have tested have considered the programs interesting, challenging and informative. Objective data about their instructional value is being obtained.

For further information contact: Professor James H. Moller, M.D., Department of Pediatrics, Box 447, Mayo Hospital, University of Minnesota, Minneapolis, Minnesota, 55455.

Learning Resource Development Center
College of Medicine

The Center for Educational Development at the University of Illinois College of Medicine has established a Learning Resource Development Center (LRDC) to assist in the development of innovative uses of educational technology. For example, self-instructional programs utilize simulation devices to assist students in learning specific skills of physical examination. These devices range from sophisticated electronic machines such as a heart sound simulator, breath simulator, and strabismus detection simulator to simple human anatomical replicas of pelvis, eyes, larynx, and ear.

Each device represents a real life situation and permits the student physician to practice skills which are necessary in physical examination. The LRDC presently contains simulation devices which facilitate learning of specific skills in cardiac auscultation, gynecological examination, opthalmology, laryngoscopy, rectal examination, ear examination, and pulmonary auscultation. Most of these devices are being utilized as an integral part of the regular instructional programs of the College of Medicine.

Prior to the introduction of these learning devices into the instructional programs, an evaluative comparison was made between students who used simulation devices and those who learned through the traditional methods only (lectures and clinical demonstration). The students were evaluated on their performance on real patients for the skills specified for each simulator. The data obtained indicated that the experimental group scored significantly better than did the control group which did not use the simulators.

During the operational phase of the LRDC, improvements are continually being made to enhance the educational effectiveness of each simulator. These devices are not designed to replace the clinical experiences on human patients, but rather to provide additional opportunities to strengthen such experiences.

For further information contact: Dr. Abdul Sajid,
Office of Educational Resources, Center for Educational Development,
833 South Wood Street, Chicago, Illinois, 60612.

Simulation Technique in the Teaching and Testing
of Problem-Solving Skills

Each problem is brought to the attention of the student with a short film or a brief verbal description in a manner resembling that in which it would be posed in the real world. The respondent must then decide how he will first approach this problem; he records his choice from among several general types of inquires and/or actions by erasing the opaque overlay or developing the latent image on a specially treated answer sheet to reveal an instruction directing him to the appropriate section of the problem booklet. There he is confronted with a long list of specific inquiries or actions of the type he initially sought. Again he records each decision on the specially treated answer sheet to reveal the results of each inquiry or action he selects. Once he has obtained these data, it is impossible for the student to retract a decision that is revealed to be ineffectual or harmful.

On the basis of these new data the student must decide upon the next step he wishes to take and again records that decision to obtain instructions directing him to the next appropriate section of the problem. In this fashion a problem may be carried through many stages, at each of which the respondent must make further decisions based on the specific responses evoked by his own earlier decisions.

Each problem is constructed with many alternate sections to allow for different approaches and for variation in feedback. The complications which must be managed differ from student to student depending (as they do in life) on the unique combination of specific procedures each has elected at earlier stages. Hence, in structuring a simulation, systematic provision is made for the problem to evolve in different ways depending on the unique configuration of prior decisions each respondent has made.

To date, the Committee on Student Appraisal of the University of Illinois College of Medicine has developed a library of approximately 200 such simulations for use in assessing clinical judgment of medical students, residents and clinicians in practice. Twenty selected problems with additional commentary on each, such as a physician might receive in consultation with a specialist in the field, are available in the committee's recently published book of Clinical Simulations.

For further information contact: Christine McGuire or John Lackmann, Center for Educational Development, University of Illinois, College of Medicine, 835 South Wolcott, Chicago, Illinois, 60612.

Systematic Inquiry and the Education of Health Sciences Faculty

In 1973, thirteen faculty from schools of Medicine, Dentistry, and Pharmacy participated in the pilot nine week program to develop an experimental or inquiry approach to medical education practice.

Participants planned and conducted at least two inquires during the program and formulated an investigation to be conducted within four months after the training program. Two aspects of the program are seen as particularly important: (1) training was staggered over a nine week period to enable participants to test hypotheses and proposals formulated during the program in their home settings; and (2) staff behavior modeled an inquiry set rather than the more traditional "imparter of information" behaviors.

Program evaluation emphasized two areas: (1) the relationship between selected personality and organizational climate variables and the development of an experimental/inquiry set; and (2) program elements facilitating acquisition of the desired set. Such variables as sense of personal power and a desire to make some definable impact appear to be more strongly related to acquisition of the desired set than organizational climate. Organization in terms of a coherent philosophy, and staff behavior which modeled that philosophy were identified as significant program elements. A modified version based on the findings of the pilot program is being tested with allied health educators.

For further information contact: Karen J. Connell, or Jean M. Alberti, Center for Educational Development, University of Illinois, College of Medicine, 835 South Wolcott, Chicago, Illinois, 60612.

Workshop for Authors of Written Simulations
in Medical Diagnosis and Patient Management

To assist potential authors of simulations in several fields, staff from the Center for Educational Development of the University of Illinois have developed a standard workshop design and set of workshop materials, which have now been employed in a series of workshops offered under the sponsorship of the National Council on Measurement in Education, the Research Training Seminar Series of the American Educational Research Association and the Group on Medical Education of the Association of American Medical Colleges.

Each workshop is designed as an intensive three day work session for groups of 40-50 participants. Prior to the workshop, each participant receives a set of sample written simulations together with an elaborate Handbook detailing step-by-step instructions for constructing, scoring, and interpreting the results of branched simulations suitable for use in teaching, testing, and research design. He is expected to work through the materials in advance of the opening of the workshop. By the end of the workshop each participant is expected to have completed the construction and scoring of one problem in his own field, and to have developed the skills necessary to serve both in the capacity of author and of consultant in the development of additional such materials.

To facilitate achievement of these objectives, the workshop itself is conducted with relatively few, brief general sessions on such topics as selecting, planning, developing, and scoring simulations. In addition, evidence on the reliability and validity of the technique for assessment purposes is presented for general discussion. However, most of the time is devoted to individual and small group work and to consultation with each other and with a staff of 6-7 available throughout the workshop.

Most of the approximately 200 people who have participated in workshops offered to date have succeeded in constructing a useable simulation during the workshop, and in gaining sufficient skill to continue further development independently. In addition, several participants have utilized their workshop experience and materials to conduct subsequent training sessions for their own faculties.

For further information contact: Christine McGuire or Philip Bashook, Center for Educational Development, University of Illinois, College of Medicine, 835 South Wolcott, Chicago, Illinois, 60612.

NURSING

Independent Study and Multi-media Programmed Learning in Nursing

A new format has replaced traditional teaching methods in the Principles of Nursing Care course at Indiana University School of Nursing. Students proceed through 30 study units for two semesters, guided by a handbook that contains introductory information, objectives, assignments and self-evaluation tools for each unit. Most assignments are completed in the learning laboratory where a variety of media resources are available and an instructor is on hand to offer assistance. The students practice physical skills here before attempting them in the hospital setting.

Small group seminars are held for two hours each week at which time the instructor works with the students in transferring content material into actual nursing practice. In addition, the student spends five hours each week in the clinical area, under the supervision of an instructor. Exams are scheduled at regular intervals but responsibility for covering the material rests with the student.

Although research conducted during the 5 year project period offers no proof that this approach is more effective in terms of students' grade point averages or clinical performance, four essential benefits of the system have been recognized: 1) with no lectures to prepare, the instructor knows the student better, as an individual, and this is reported as very satisfying by instructors and students alike, 2) the student is able to progress through the content material at his own pace, repeating mediated programs when necessary and moving rapidly when he is able, 3) the ill student can catch up with his work and not lose a semester in school because he has missed a series of lectures, 4) although their clinical experiences differ, all students are exposed to a well controlled and essentially identical content base.

For further information contact: Professor Magdalene Fuller or Diane Brandt, Indiana University School of Nursing.

PHARMACY

Teaching Through a Combination of Videotape, Computer, and Printed Copy

In Pharmaceutics 402, students are required to perform an experiment concerning drug absorption rates which utilizes goldfish and covers a three-week period. It is a team project, and the faculty member must necessarily present information to small groups of about 9 students. Consequently, the same lecture on experimental procedures was given from 9 to 12 times each quarter this course was offered.

The objectives for the new arrangement were: to develop self instructional materials on experimental procedures which would maintain the concept of individualized instruction, improve the consistency and quality of instruction, and save faculty time.

Videotape was chosen as the medium because of ease of production, availability, and ease of display to students in small groups. The videotape is also available in the library so that students are able to review the experimental procedures. The videotape was produced in two parts, one to show the experiment utilizing the goldfish and the second part to show the determination of the partition coefficient, based on lipid solubility of the drug and pH of the medium.

Each student uses as many as three goldfish for his portion of the experiment. He may also use several drugs or dosage forms of a drug. After all students have completed the experiment, the data is pooled over the entire class and certain attributes of drugs are statistically determined using a computer program designed for this purpose.

Following initial evaluation of the videotape, it was determined that graph and statistical material were paced too fast for accurate note taking. Subsequently, printed copies of key graphs, tables, and statistics were reproduced to be kept by the student during viewing and for use in the experiment. The videotape is about one hour in length.

For further information contact: Dr. Richard Reuning, Room 236, College of Pharmacy, 500 W. 12th Avenue, Ohio State University, Columbus, Ohio, 43210.

PHILOSOPHY

Evaluation of Academic Progress Through Weekly Cumulative Tests

Students have expressed dissatisfaction with the system of academic evaluation in which the grade for a course depends largely upon one or two hour exams during the course of the semester and a final examination. Many faculty, however, have been reluctant to abandon the final examination, fearing that without a significant cumul..ive test at the end of the course, students would quickly forget material covered in the early part of the semester. What I set out to develop was a testing system that would answer to the interests of both groups.

What emerged was a system of weekly cumulative tests. On any given test, students may expect to find questions about anything covered up to that point in the semester. For machine-graded tests, I usually employ a mix of questions about recently covered material and questions about earlier material, together with questions combining material from different parts of the course. For essay tests, questions of the latter sort are a natural choice.

The system has proved to have several merits. Obviously, students are encouraged to review all material weekly--which prevents "abandonment" of material learned in the early part of the course. The trauma of a final examination is eliminated: there is no need to "cram" older material; nor is there the fear of failing the whole course on the basis of a single test. Students do not have to wait for a six-week or mid-term exam to know how they are doing in the course. They are encouraged to study regularly and not fall behind. And, as a peripheral consideration, the work of preparing and correcting tests is spread out over the semester--for instructional, secretarial, and data-processing personnel and equipment alike.

The great majority of students actually prefer such a system. In a recent survey, 80% expressed the belief that the system got them to remember more about the course as a whole and 92% said they would prefer a course with such weekly cumulative tests to a course with two major tests during the semester and a final.

In the light of these results, I think it safe to say that--for many types of courses, at least--final examinations can become a thing of the past, with the purposes of education being well served in the process.

For further information contact: Ronald A. Cordero,
Department of Philosophy, University of Wisconsin--Oshkosh,
Oshkosh, Wisconsin, 54901.

PHYSICAL EDUCATION

Integrated Audio-visual Presentations and Workbooks in the Teaching of Physical Education

Basic physical fitness skills are acquired by students as they work through an instructional system which frees teachers to work individually with students, and permits each student to design and implement an individual fitness program suited to his own preferences and existing level of fitness. As many as 14 instructors have been supported by audio-visual materials developed to present sequences of carefully tested units to approximately 2,000 students a year.

The materials consist of pre-recorded narration on audiotape cassettes coordinated with projection of 445 color slides providing illustration for 12 presentations scheduled throughout the 20 class sessions of a quarter. Students use a course outline, a 90-page workbook keyed to these 12 presentations, which provides for active response to involve students in each presentation. It also provides a complete set of outlines, and appendices summarizing procedures to follow when using various exercises which students voluntarily select for their own fitness programs. About one-fifth of total class time is used to present the 12 audiovisual lessons and the remaining time is devoted to application of these concepts and principles.

Continuing evaluation of the system indicates a favorable student response to the overall course with individual preferences for specific course activities and procedures ranging across all available choices. A course proficiency examination has been developed and is used to identify and to direct these students to one of two follow-on courses in the sequence.

For further information, contact the course coordinator, Mr. Robert Beck, PEM, University of Illinois at Chicago Circle, Box 4348, Chicago, Illinois 60680.

SOCIOLOGY

SIMSEARCH (Research Simulations)

Sociology majors at the University of Iowa are required to take a two semester sequence of theory, research methods, and statistics. SIMSEARCH was developed to augment the existing structure of the second course in this sequence. The major objective of SIMSEARCH is to provide applied experience and the learning of logical principles of research and problem solving. Three additional goals and means for course evaluation are: (1) increased amount of content learning since book and lecture material will be supplemented with practical decision making experience; (2) increased feelings of interest and involvement in the course as implied by research on simulations generally and evaluation of a pilot study of this program; and (3) increased practical skill in solving research problems.

The research methodology course, offered during the spring semester, includes the traditional elements plus the practical application provided by the research simulations. The simulations are of the man-computer variety and they engage the student in interactive computing through remote terminal access. The student, using a typewriter-type terminal, calls up the simulation desired. He then proceeds through a series of decisions involving the following research steps:

(a) selecting a research problem,
(b) selecting an appropriate theory,
(c) designating a target population and selecting a sample,
(d) selecting a research design,
(e) selecting means of conducting measurement, and
(f) selecting the appropriate data analysis strategy.

For each step the student receives instructions and a set of alternatives. After a decision is made, feedback in the form of explanations of the implications of the decisions is provided. A wrong decision is replaced by other alternatives until the correct choice is made, and the participant then proceeds to the next decision point. This process is repeated until the student has completed an entire research problem.

For further information contact: Stephen G. Wieting, Department of Sociology, Macbride Hall, University of Iowa, Iowa City, Iowa, 52242.

II. University-Wide Activities

ADMINISTRATION LEVEL ARRANGEMENTS

Curriculum and Faculty Liaison Between the University and High Schools

In 1971 the University of Wisconsin--Madison hired a curriculum liaison specialist to work with the UW--Madison faculty and state high school teachers; prospective students and the University; and with the University and state agencies.

On a large campus, it was felt that bulletins, brochures, and catalogs prepared for mass distribution did not meet the needs of prospective students, nor their parents and counselors. A special publication aimed at students--readable and "relevant"--was written and distributed throughout the state to explain in 1970's terms all those academic programs for undergraduates, on a large, graduate and research-oriented campus, which are unique or new. Facts as simple as what majors exist, in alphabetical order, and what kinds of jobs students might consider with a given major were presented in simple terms. A second objective beyond helping the students directly was to instill in the faculty a sense for needs of both the general student who is experiencing a teaching-learning pattern different from high school, and the student with a disadvantaged educational background.

The primary objective of curriculum liaison has been the outreach effort: bringing together UW--Madison faculty members and state teachers. On-campus conferences in curricular areas have been held, and more are being planned. The University of Wisconsin--Madison believes that this multidimensional program will eventually solve many of the problems which face the large university as it tries to relate to the needs of students and colleagues on the secondary level. A newly-created Student/Faculty University--High School Curriculum Liaison Committee has been established to advise the curriculum liaison specialist; the campus administration is committed to the concept of curriculum and faculty liaison and has lent its support and personnel; and the Office of Undergraduate Orientation (formerly High School Relations) has been indispensable in offering its expertise and contacts throughout the state to the end of providing understanding and communication between the University faculty, its students and administration, and the people of the state of Wisconsin.

For further information contact: Lewis A. Bosworth or Blair H. Mathews, The University of Wisconsin, Madison, Wisconsin 53706.

AUTOMATION AND TECHNOLOGY

CATV as an Educational Resource

In 1973, Purdue received full access to, and major responsibility for, one channel on the cable TV system in the Lafayette-West community. The relationship is novel and perhaps without parallel. Thus far, the channel has been programmed with an eight-week summer compensatory education series aimed at the age range from 5 through 12; with general interest adult education materials; and with two specially prepared college credit courses. In addition, a mid-channel on the cable has been used, for security reasons, to provide professional medical education programming to local physicians and nurses. Viewing is done in local hospitals or on home receivers adapted for mid-channel reception. Similar interconnection has been achieved with the campus' master antenna cable system (called URTAS), a system that serves University residences and other non-academic areas. This connection provides on-campus residents with access to the available education programming.

Several things are unique about the present arrangement. Perhaps foremost is the University's role as programmer of the CATV channel; this is done in a cooperative arrangement with the local CATV operator. It is unique also that the cable has a high saturation in the community, reaching about 85% of local residents, through 17,000 cable "drops," and the same percentage of students. Thus, many services can be contemplated that require full, or nearly full, coverage of the community. The breadth of audience and service is further enlarged by tying the systems to Purdue's closed-circuit (instructional, on-campus) TV system and to Indiana's telecommunications network (called IHETS), both of which can be connected as needed; further expansion is expected in 1974 to provide one channel of cabled FM service. This will allow the University's extensive instructional radio offerings to be made more widely available. None of the programming thus far has seemed outstandingly successful, although each has had some following. For example, only four persons established credit from the first offering of one course, Cultural Russian, while 30 established credit in a more traditional course in Cultural Anthropology. Course syllabi were sold in larger numbers, approximately 50 for Russian and 100 for Anthropology.

For further information contact: G.W. O'Brien, Continuing Education, Stewart Center, Purdue University, W. Lafayette, Indiana, 47907.

Development of the Educational Uses of Slow-scan Televideo

The transmission of visual material and two-way voice communication over ordinary telephone lines for educational purposes is being studied and developed by a team of engineering and physics professors at Northwestern University. "Slow-scan televideo" differs from ordinary-motion television in being able to use a narrow information channel. By sending as visual material only a sequence of "snapshots," an ordinary telephone line like those in use in centrex systems can become the transmission medium. The paradigm of a teacher using a blackboard suggests that motion is not necessary in most teaching situations. With two-way voice communication live interaction is retained as an important dimension of the student-teacher relationship. The ultimate use of such technology would be to bring the essentials of the classroom to anyone who has access to a telephone and to create a true "university without walls."

To date, the successful use of slow-scan televideo has been demonstrated in a class which is being taught by instructors located at one point on campus with students meeting in a classroom at another location. The communication link between these two points is a telephone line which is part of the regular telephone system of the university when not in use for televideo teaching. The evaluation of the initial use of this new technology suggests that slow-scan televideo has far reaching potential as an aid to the sharing of teaching resources among geographically separate institutions as well as a tool to help open new educational "markets," especially in the area of continuing education, thus broadening the student and financial base of higher education.

For further information contact: Dr. Stuart L. Meyer, Department of Physics; or, Dr. William C. Cohen, Department of Chemical Engineering, Northwestern University, Evanston, Illinois, 60201.

Off-campus Electronic Media Programming
for Engineering, Architecture, Mathematics and Applied Science

To make the many educational resources within the University of Wisconsin System available to students at locations near their homes or places of business, Extension has expanded its selection of "off-campus" offerings through electronic media programming by wire and broadcast. The Video Cassette Course System is the newest element developed to locate substantial educational opportunities at a point of convenient access for participants. This system combines specially designed textual materials with incisive, high-quality visual components presented with color video tape cassettes and associated playback equipment. Most of the courses offered in this manner carry college credit and have been developed to serve students convened in a college classroom, individuals using the facilities of a nearby "learning center," or groups gathered within an industrial firm or government agency.

Subjects available during 1974 include materials science, meterology, basic calculus review, and numerical control of machines. The courses may be applicable toward the University of Wisconsin Professional Development Degree in Engineering, details of which are available upon request. The video lessons are fully complemented by detailed study guide notes, text assignments, written lesson submissions and critique, examinations, the opportunity for telephone conferences with the instructor, and official transcripting to aid in subsequent application toward a degree objective.

The video cassette courses are designed to afford maximum independence to the individual or class at the receiving end. At the same time, a substantial amount of easily used visual material is available, probably better organized than it would be in a typical on-campus classroom situation. The timely distribution of the cassettes supplies a disciplining "pacing" which is absent in most other independent study modes, while still offering the flexibility to view and review the lessons at times most convenient to the student.

For further information contact: Professor Lowell B. Jackson, Director, Electronic Media Programming in Engineering, University of Wisconsin-Extension, 432 North Lake Street, Madison, Wisconsin, 53706.

Project NU-CAT (Computer Aids to Teaching)

Project NU-CAT has as its goal to involve both faculty and students in the process of preparing lessons for instructional use both in a regularly scheduled course and in informal learning activity outside the classroom. Support from the General Electric Educational Foundation has made possible the use of a variable terminal network at remote stations throughout the campus. Hazeltine and Texas Instrument terminals together with three PLATO-IV terminals are used by faculty and students. Beginning with a LINGO CAI system developed by Dr. James Schuyler, the project now utilizes a LINGO/HYPERTEXT system involving HYPERTUTOR language which is similar to PLATO's TUTOR IV language. A LINGO/HYPERTUTOR interpreter is a permanent part of the LINGO CAI system. It accepts most of the TUTOR-IV language, and drives CRT or teletype compatible terminals connected to the CDC 6400 at Northwestern University.

Student and faculty activity has involved both on-line instruction utilizing Northwestern University computing facilities as well as the PLATO-IV system through a telephone line dedicated to the PLATO-IV computer at the University of Illinois. In addition, activities have included the use of the facility by selected high school students in the Chicago area. Faculty at other institutions have also been part of the project and have developed lessons now in use at their institutions.

The objectives of the project are to involve educational personnel in as many relevant uses of the computer in learning as their interests indicate. Records are being kept to develop an instructional cost for various types of uses. Project reports will be available for distribution in November, 1974.

For further information contact: Dr. James Schuyler, Computer Aids to Teaching, 2003 Sheridan Road, Northwestern University, Evanston, Illinois, 60201.

FACULTY DEVELOPMENT

A "Cafeteria" Program for Teacher Evaluation

Rating scales employed in traditional instructor and course evaluations are often inadequate when instruction departs from the familiar lecture-recitation format. One method of introducing greater relevance into evaluation is to write a separate rating scale for each teaching condition, but relevance here is gained at the expense of standardization.

Purdue's new "Cafeteria" Program has two components: first, a standardized and mandatory set of five evaluative statements comprises the University core; second, a collection of about 225 statements descriptive of various aspects of the courses, instructors, and instructional strategies constitutes the catalog. Core and catalog are computer stored and a listing is published and distributed to the faculty. To use the system, an instructor scans the catalog to select items most relevant to his teaching situation. Items are recorded on a request form and are entered into a computer which prints, in quantity, a tailor-made rating scale. Each scale contains the requested items and the mandatory University core.

Each instructor administers the rating scale to his class and returns the completed response cards or forms to the Measurement and Research Center's Data Processing section. He then receives a report listing response frequencies and item medians by mail. In addition to these individual reports, MRC also annually publishes various departmental, school and University evaluation summaries. These provide faculty with normative information, derived from others belonging to similar groups. Reporting procedures protect the anonymity of participants, while providing comparative information.

In "Cafeteria's" first year over 1,000 classrooms were evaluated; that figure is expected to double this year. Faculties from four academic departments have voted to participate as a group-sponsored activity. But we believe that one of the best indicators of success has been the substantial faculty contribution to the item pool. These include additions which cover an increasingly wide range of instructional situations and nuances, as well as suggestions for item clarity.

For further information contact: Warren F. Seibert, Measurement and Research Center, Purdue University, West Lafayette, Indiana, 47097.

INTERDISCIPLINARY PROGRAMS AND COURSES

An Interdisciplinary Course on Planning a Livable Future

"Future Worlds" is a large interdisciplinary lecture/discussion project course coordinated by the Geography Department at the University of Michigan. It identifies and discusses basic issues of planning a livable future. Nationally known lecturers, e.g. Ralph Nader, B. F. Skinner, Margaret Mead, William O. Douglas, have given this program considerable visibility but the major effort involves students and teachers from various departments on this campus.

Now in its third year, the course enrolls over 300 students. The overall program is largely organized and managed by student volunteers with expenses covered by contributions from different departments, schools, units and student organizations. The course is open to all students and meets for two lectures and one discussion section each week. The "Tuesday" lecture is usually given by an off-campus person while the "Thursday" lecture is given over to multimedia presentations and talks by members of the U-M faculty under such headings as: Social Justice and the City; The Structure of Political, Scientific and Spiritual Revolutions; Alternative Conceptions of Man: Mechanistic versus Autonomous.

The study programs followed by the different discussion sections range from conventional individual projects to some rather unusual activities. One group gave a "Future Feast", one made a movie, and another group set up their own "Future Community" on a nearby farm for the weekend. The discussion-group leaders are volunteer graduate and undergraduate students.

The three-day "Future Worlds' Conference Festival" is, for many, the climax of the course. Last year a 30 foot geodesic dome was erected in mid-campus as headquarters for the Festival. As many as 100 different events are available via the panel discussions, movies, teach-ins, exhibits, lectures and tours.

Student evaluations have been highly favorable and the continued large enrollment in the course also attests to its appeal to students. Budget support is a necessary condition since the planning and management of a course like this are quite demanding. It is in this area that participants felt that improvements should be made.

For further information contact: Prof. Gunnar Olsson, Department of Geography, University of Michigan, Ann Arbor 48104.

Women's Studies

The growth of Women's Studies at the University of Michigan has been rapid and dramatic. The impetus came from a group of faculty and students who, in the fall and winter of 1972-73, volunteered their services to teach a pilot course, "Introduction to Women's Studies". The course met with enthusiastic student response and the LS&A Executive Committee approved the establishment of a Women's Studies Program for fall, 1973.

In its first year the Program offered three courses, each demonstrating its commitment to innovative teaching techniques. Women's Studies 240, "Introduction to Women's Studies", involved a variety of learning environments: lectures from one of five different disciplines, 15-student discussion sections, project groups with about eight other students, and an undergraduate student as the group facilitator. In winter term, 1974, a student could choose from among 15 different project groups, e. g., one which produced a weekly radio program, one which created and performed street theater, one which studied women's mental and physical health and published a guide to women's resources in Ann Arbor, another which concentrated on the role of women in the literature of the 1920's. Students cite project work as the most gratifying aspect of the introductory course, primarily for two reasons: 1) they enjoy working in a supportive atmosphere, at their own pace, and toward an independently designed goal; and 2) they work with more dedication because their projects are in the public interest. Reports not distributed directly to the community become part of the Women's Studies Office library of printed and media materials.

Women's Studies 340, "Interdisciplinary Perspectives on Women", gives students an opportunity to explore one area of women's studies in greater depth. During 1973-74 different sections concentrated on psychophysiology, cross-cultural history, and feminist writing. In keeping with the Program's goal to disseminate literature and research by and about women, the writing section published a literary magazine of student poems and stories during the winter term of 1974.

Women's Studies 440, "Research on Women", focuses on research methodology as well as on specific research projects. A major innovation is the organization of a scholarly research journal, University of Michigan Papers in Women's Studies, for which class members serve as the editorial board and and evaluate submitted work.

For more information contact: Assistant Professor Margaret Lourie, Director of Women's Studies, 1058 LS&A Building, University of Michigan, Ann Arbor, Michigan 48104.

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IV. Content Analysis of Issues 1-10

On pp. 59-63 of the previous report (No. 9, Spring 1973) a summary analysis was made of the kinds of instructional changes represented by all the abstracts in the first eight reports. This "content analysis" has been continued through issues 9 and 10 which extends the number of abstracts from 241 to 321. The percentage distribution in terms of basic categories of change is given in the following table:

Computer use	9%
Visual aids	16
Audio aids	7
Multimedia	3
Instructional rearrangements ("Keller plan," simulation and gaming, field experiences, living-learning settings, etc.)	26
Testing	3
Evaluation (Students, teachers, courses, etc.)	6
Curricular reordering (Objectives, interdisciplinary, etc.)	14
Others (Teacher development, research on teaching, continuing education, changing role of teacher, etc.)	16

The characteristic features of any given abstract may have been tallied in more than one category but the percentage distribution is about the same as previously reported. It is my personal interpretation that the dominant single theme is the effort of teachers to adapt instruction to the individual differences of students--especially with respect to "self-pacing."

SCE, Editor